REMARKS

The Official Action of 2 April 2007 has been carefully considered and reconsideration of the application as amended is respectfully requested.

The courtesy of Examiner Lyle Alexander in arranging for and conducting an interview with the undersigned at the USPTO on 22 September 2007 is gratefully acknowledged. The Interview Summary which issued at the interview accurately summarizes the major points discussed, and Applicants provide below a more detailed description of what transpired.

In the interview, Applicants requested that, in a subsequent action, if any, the Examiner elucidate the reasons for rejection of each of the dependent claims. See MPEP 707 ("The Examiner's action will be complete as to all matters. . . ."; and "'Whenever, on examination, any claim for a patent is rejected, or any objection . . . made' notification of the reasons for rejection and/or objection together with such information and references as may be useful in judging the propriety of continuing the prosecution (35 U.S.C. 132) should be given.").

In the interview, Applicants' undersigned representative also requested clarification as to how certain of the references, and in particular the Schalkhammer references, were being applied to the claims. As a result of clarification in the interview, Applicants only now understand how the Examiner might be interpreting

the terms of the claims and applying the references thereto. In view of such understanding, Applicants respectfully submit herewith statements and argumentation to traverse the prior art rejections which are in substitution for the argumentation and statements made previously, which Applicants respectfully rescind and withdraw from consideration.

Claim Rejections under 35 U.S.C. 102 (b)

1. Claims 213-263 have been rejected as allegedly being anticipated by Aussenegg et al. (US 5,611,998). More specifically, the Examiner indicated that: *"All of these references teach method of sample analysis where the sample is adsorbed on a metal island, electromagnetic radiation is transmitted through the sample/island and the subsequent deviations in absorption are correlated to the identity of the sample".*

At the interview, Applicants pointed out that the claims all require that the recited electromagnetic radiation must be transmitted **through the first structure**, and that Aussenegg et al do not teach this and limitations, among others.
In this connection, Applicants respectfully note the following:

The Examiner's interpretation of Aussenegg et al. reference is respectfully incorrect: this reference is devoted **solely to measurements of the reflection** (e.g. col. 1, line 65 - col. 5, line 5), while independent claims 213 and 263 refer to a **transmission**. Indeed,

- claim 213 two times recites "transmitting electromagnetic radiation being emitted by said transmitter ... **through** a ... structure" and "receiving a transmission of said electromagnetic radiation by a detector", and

- claim 263 recites "a transmitter comprising a generator of electromagnetic radiation (see 2nd par. of the Detailed Description); a detector configured to receive said electromagnetic radiation being emitted by said transmitter and **transmitted through** the structure".

In Aussenegg et al., **the emitted, reflected and detected light** is not transmitted through the structure (i.e. metal island containing structure), because it is reflected from it. Also, in Aussenegg et al., a detector detecting the reflected light does not receive **a transmission of light emitted by the emitter**, because this detector is on the wrong side of the structure (i.e. is accommodated for reflection-mode detection). The Examiner's attention is respectfully drawn to the fact that **the reflection**, measured in Aussenegg et al., **does not represent transmission** (through the conservation of energy), because of the presence of significant absorption (e.g. col. 2. lines 16-18). Hence, the technique in Aussenegg et al. does not anticipate the subject matter of present claims 213 and 263.

Additionally, Applicants respectfully note that while claims 213 and 263 respectively refer to "adsorption of a chemical substance from the sample **onto** the **first structure comprising a ... substrate carrying ... metallic islands**" and to "the first structure capable of adsorbing thereon the ... chemical substance",

Aussenegg et al. do not teach such adsorption. The technique of Aussenegg et al. uses a structure with a reactive matrix being **between the wafer and metal islands** and capable of swelling/shrinking when a substance to be measured **diffuses into** the sensor material (col. 1. lines 53-55), i.e. penetrates into a region underneath the islands. Once again, the technique of Aussenegg et al. does not anticipate the subject matter of present claims 213 and 263.

In view of the above, Applicants respectfully submit that the prior art rejection based on Aussenegg et al should be withdrawn. Should the Examiner disagree, Applicants respectfully request that he present an element-by-element analysis of the claims, including any rejected dependent claims, relative to the Aussenegg et al disclosure to show what portions of the reference, if any, teach each of the claim elements. See MPEP 707.

2. Claims 213-263 have been rejected as allegedly being anticipated by Schalkhammer et al. -1 ("Detection of fluorophore-labelled antibodies by surface enhanced fluorescence on metal nanoislands", SPIE Vol. 2976, pp 129-136, 1997).

The Examiner's statement that *"All of these references teach method of sample analysis where the sample is adsorbed on a metal island, electromagnetic radiation is transmitted through the sample/island and the subsequent deviations in absorption are correlated to the identity of the*

sample", is respectfully unclear, and in two of its possible meanings is incorrect. More specifically:

This statement could be read to mean that the *excitation light* of Schalkhammer et al.-1 reads on the claimed *emitted light*, or reads *fluorescent light* of Schalkhammer et al.-1 reads on the claimed *emitted light*. Since the Office Action respectfully does not clearly set forth the basis for the rejection, Applicants hereby discuss both of these cases separately, while first noting that the claims require that the electromagnetic radiation transmitted by the claimed transmitter is the same electromagnetic radiation that is detected by the claimed detector:

2.1 In the first case (i.e. if the Examiner reads the *excitation light* of Schalkhammer et al.-1 on the claimed *emitted light*), Applicants respectfully submit that the **excitation light**, equated by the Examiner with emitted and then transmitted and detected light, **is not the light detected in** Schalkhammer et al.-1. In fact, in "an evanescent excitation geometry" (page 134, lines 5-4 from the bottom) the excitation light would not reach a detector even if the detector for the transmitted light would be present. Meanwhile, **claims 213 and 263 refer to the detection or detector of the emitted and transmitted through the structure**.

2.2 In the second case (i.e. if the Examiner reads the *fluorescent light* of Schalkhammer et al.-1 on the claimed *emitted and transmitted light*), it should be noted that the **fluorescent light in** Schalkhammer et al.-1 reference (as well as in US 5,866,433 - Schalkhammer et al.-2 reference) is not emitted by a **transmitter**

used in the present invention and recited in claims.

In this connection, Applicants respectfully call attention to the specification of the present application, and to the Declarations under 37 CFR § 1.132 (submitted herewith), which show that "the broadest **reasonable** meaning" of the term "transmitter" does not include fluorophors from the Schalkhammer et al.-1 and Schalkhammer et al.-2 references.

In particular, it is clear from the specification, that, according to the present application, the transmitter is described as a generator of electromagnetic radiation or a light source configurable and operable independently of the sample, for example before the measurement. In contrast, fluorophors of Schalkhammer et al.-1 and Schalkhammer et al.-2 references emit light only during the measurement and only from a nanometric vicinity of metal islands. Moreover, the Schalkhammer layer of fluorophors changes its configuration from measurement to measurement (as per Schalkhammer et al.-1 and Schalkhammer et al.-2, intensity of fluorescent light needs to change to enable the measurements). Thus, the Schalkhammer fluorophors are not within the meaning of the term "transmitter" recited in Claims 213 and 263 and read in light of the specification of the present application. Neither any general to the art definition of the term "transmitter" nor its interpretation in the specification could lead to the fluorophors from the Schalkhammer references being read on this claim term.

In this connection, Applicants respectfully call the Examiner's attention to the relevant case law and MPEP sections:

As stated in re Cortright, 165 F.3d 1353, 1358, 49 USPQ2d 1464, 1467 (Fed. Cir. 1999): "Although the PTO must give claims their broadest reasonable interpretation, this interpretation must be consistent with the one that those skilled in the art would reach. See In re Morris, 127 F.3d 1048, 1054, 44 USPQ2d 1023, 1027 (Fed. Cir. 1997) "[T]he PTO applies to the verbiage of the proposed claims the broadest reasonable meaning of the words in their ordinary usage as they would be understood by one of ordinary skill in the art . . . ."); In re Bond, 910 F.2d 831, 833, 15 USPQ2d 1566, 1567 (Fed. Cir. 1990) ("It is axiomatic that, in proceedings before the PTO, claims in an application are to be given their broadest reasonable interpretation consistent with the specification, . . . and that claim language should be read in light of the specification as it would be interpreted by one of ordinary skill in the art.") (emphasis added); see also M.P.E.P. § 2111.01 (" [T]he words of a claim . . . must be read as they would be interpreted by those of ordinary skill in the art.").

As stated in MPEP, 2111.01 Plain Meaning, par. III: "If extrinsic reference sources, such as dictionaries, evidence more than one definition for the term, the intrinsic record must be consulted to identify which of the different possible definitions is most consistent with applicant's use of the terms. *Brookhill-Wilk 1*, 334 F. 3d at 1300, 67 USPQ2d at 1137; see also "Renishaw PLC v. Marposs Societa' per Azioni, 158 F.3d 1243, 1250, 48 USPQ2d 1117, 1122 (Fed. Cir.

1998): "[W]here there are several common meanings for a claim term, the patent disclosure serves to point away from the improper meanings and toward the proper meaning. (emphasis added)".

Also, see MPEP, 2111.01 Plain Meaning, in par. IV: "The specification should also be relied on for more than just explicit lexicography or clear disavowal of claim scope to determine the meaning of a claim term when applicant acts as his or her own lexicographer; the meaning of a particular claim term may be defined by implication, that is, according to the usage of the term in >the< context in the specification. *See Phillips v. AWH Corp.*, *>415 F.3d 1303<, 75 USPQ2d 1321 (Fed. Cir. 2005) (*en banc*); and *Vitronics Corp. v. Conceptronic Inc.*, 90 F.3d 1576, 1583", and

The fact that the Schalkhammer fluorophors are not within the meaning of the term "transmitter" is even more evident because of the following:

It is clear from the specification that the transmitter operating mode (or configuration) may be adjusted **prior to the measurement** (this procedure is described in Figs. 1A-1B, page 41, lines 8-16 and page 43, lines 4-8). Also, the transmitter used in the invention may belong to a kit not yet being arranged in an apparatus and **not yet including a sample** (page 7, lines 12-27) (while the Schalkhammer flourophors are to be dissolved in the sample and to diffuse into the immediate vicinity of metal island structure for emission - see e.g. col. 2, lines 62-67, and radiation arrows 10 and 11 in Figs. 1-4 of Schalkhammer et al.-2; take into account the absence of radiation arrows from fluorophors beyond the

evanescent length D). There are also other examples in the present application supporting the meaning of the term "transmitter" not covering fluorophors of the cited references: On page 79, lines 14-15, the specification recites "In all measurements the reference beam was passed through air". There would be no possibility **to pass the reference beam through the air** if the transmitter would be formed by fluorophors adsorbed on the metal island structure on one side and having the sample on the other side, as in cited references. As well, there would be no opportunity to perform **a baseline correction for said transmitter before and during the measurements** if the transmitter would be formed by fluorophors as in the cited references, since the presence of the sample would obstruct this procedure. On page 41, lines 11-13, a path of **transmitter-generated** light ray 34 is described: when the receptacle is placed in receptacle receiving element 36, light ray 34 is created still outside of the receptacle. Here again **the meaning of the term transmitter derivable from the patent application excludes fluorophors** described in the cited references, as the fluorophors would form light only if they are in the receptacle and in the immediate vicinity of the metal island structure.

Dictionary definitions of the term "transmitter" as well as **definitions found on the Web** also show that **this term does not cover the Schalkhammer fluorophors** (though these definitions were not even limited to the art of the invention).

In particular, the Chambers Science and Technology Dictionary, published

by W&R Chambers LTD and Cambridge University Press in 1988 recites:

"Transmitter (Telecomm) - Strictly, complete assemblage of apparatus necessary for production and modulation of radiofrequency current, together with associated antenna system; but frequently restricted to the part concerned with the conversion of d.c. or mains a.c. into modulated RF current."

The closest to the specification Web-found definitions recite:

- an electronic package which converts an electrical signal to an optical signal. (www.exsellsales.com/html/fiberfacts2.html)

- a device used for the generation of signals of any type and form that are to be transmitted. In radio and radar, it is that portion of the equipment that includes electronic circuits designed to generate, amplify, and shape the radio frequency energy that is delivered to the antenna where it is radiated out into space. See receiver. (amsglossary.allenpress.com/glossary/browse)

- a device that converts electrical signals to optical signals. The transmitter is usually a pump laser. (www.assemblymag.com/CDA/ArticleInformation/news/news_item/0,6501,98333,00.html)

The results of web-search are attached.

The Schalkhammer's fluorophors definitely do not present a complete assemblage or a device or an electronic device or a package (e.g. the one converting electrical signal to optical signal).

Thus, overall, it is seen, that contrary to the Examiner's implication, there is

no **broad** interpretation of the term "transmitter" that would cover the layer of fluorophors described in Schalkhammer et al.-1 or Schalkhammer et al.-2 references. Especially, **in the art of the invention** there is no interpretation of the term "transmitter" that covers these fluorophors. Moreover, even if such interpretation would exist, it would not be reasonable to apply it to the claims of the present patent application, as such an interpretation would be **inconsistent with the specification**.

This conclusion is confirmed by the Declarations under Rule 132, wherein the inventors have provided expert declaratory testimony as persons skilled in the art.

2.3 Additionally, for either one of the above cases 2.1 and 2.2., the detected light in Schalkhammer et al.-1 reference (as well as in Schalkhammer et al.-2 reference) is (a) not detected in a measurement **which is then employed for identification of plasmon absorption** as required by the claims, and (b) not detected in two measurements which are then compared for identification of plasmon absorption, as also required by the claims.

With regards to item (a), i.e. with the argument that the **fluorescent light in** Schalkhammer et al.-1 reference is not detected in a measurement which is then **employed for identification of plasmon absorption**, Applicants respectfully note that the technique of Schalkhammer et al.-1 does not employ a measurement **on**

which basis the plasmon absorption is identified. In fact, the Schalkhammer et al.-1 reference neither teaches **nor enables the identification of plasmon absorption of the emitted and transmitted light**, because the emission of the fluorescent layer, which is treated as an unknown in Schalkhammer et al.-1, is determined from **the detection** using an inherent assumption of **zero** constant absorption of **fluorescent light**.

With regards to statement (b) above for claim 213 and its dependent claims (i.e. with regards the argument that the technique of Schalkhammer et al.-1 reference does not employ two measurements **which are then compared** for identification of plasmon absorption), Applicants respectfully note the following: ***Comparing*** is neither taught nor enabled in Schalkhammer et al.-1. Such a comparison is not needed in the circumstances of the Schalkhammer et al.-1 technique, while in the technique of the present application this feature is possible and may be used. In fact, the present invention allows for transmitting light through a relatively thick layer of material as the transmitter and the detector are at different sides of the sample holder (see Fig. 1A) and none is within the sample holder. The comparison allows taking into account the relatively thick sample.

2.4 As for the 102 rejection of the **dependent claims** in view of Schalkhammer et al.-1, Applicants respectfully traverse the rejection for lack of any indication of where the features of the dependent claims are taught in the reference. With specific respect to the Examiner's contention that the reference teaches use of

a laser (as recited in e.g. dependent claims 219 and 264), Applicants respectfully traverse this rejection, because while it is correct that Schalkhammer et al.-1 and also Schalkhammer et al.-2 teach the use of laser for generation of exciting light for excitation fluorophors, **claims 219 and 264 refer to a laser emitting the transmitted and detected light. The excitation light** in Schalkhammer et al.-1 and Schalkhammer et al.-2 references **is not the emitted and detected light**, as required by the claims.

If, however, the rationale for the rejection is within the above second case (2.2), and it is the fluorescent light that is considered to read on the claimed emitted, transmitted and detected light, then Claims 219 and 264 should be patentable because the fluorescent light cannot be emitted by laser (and certainly, as discussed above, because Claims 213 and 263 recite a transmitter). In fact, fluorophors in the Schalkhammer et al.-1 and Schalkhammer et al.-2 references do not emit laser light and do not form a laser. Therefore, Applicants respectfully submit that claims 219 and 264 are patentable for reasons in addition to the reasons that Claims 213 and 263 are patentable.

3. Claims 213-263 have been rejected as allegedly being anticipated by Mayer Ch. et al. ("Surface enhanced resonance of metal nano clusters: a novel tool for Proteomics", Journal of Nanoparticle Research 3, pp. 361-371, 2001). Applicants respectfully traverse this rejection because this reference does not qualify as 102(b) prior art: it was published in December 2001, i.e. after the priority

date (26/2/2001) and after the filing date (3/8/2001) of the present patent application. In accordance with the discussion in the interview, Applicants submit herewith a revised PTO 1449 which reflects this.

4. Claims 213-219 and 222-330 have been rejected as allegedly being anticipated by Schalkhammer et al. -2 (US 5,866,433)

The current Office Action refers to the 7/11/2006 Office Action, reciting: "Schalkhammer et al. teach in column 3 lines 15+ the method of analysis is performed by interferometry or surface plasmon resonance and that the metal islands are applied to a transparent surface. The Office **maintains** *the electromagnetic radiation is transmitted through the transparent layer and is properly read on the claimed "transmitting electromagnetic radiation"".* And in the preceding Office Actions, the Examiner reads *the fluorescence on the claimed emitted light.* Thus, in the present Office Action the Examiner reads *the fluorescence on the claimed emitted light.*

Accordingly, the arguments presented in 2.2-2.4 above, which are hereby incorporated herein by reference, respectfully to overcome this rejection mutatis mutandis. If, nevertheless, the Examiner reads *the exciting light on the claimed emitted light*, then Applicants hereby, incorporate herein by reference the arguments presented in 2.1, 2.3, and 2.4 abvoe.

Claim Rejection under 35 U.S.C. § 103

Claims 220-221 have been rejected as allegedly being unpatentable over Schalkhammer et al. - 2 (US 5,866,433), in view of White et. al. (USP 6,750,065).

First, Applicants respectfully note that these claims are dependent claims, and the above arguments with regard to independent claims are respectfully considered to overcome this rejection as well. Applicants also address this rejection separately below.

The Office Action states: "*Schalkhammer et al. is silent to using a monochromator. White et. al. column 5 lines 32-43 teaches surface plasmon measurements can be made using less expensive light sources such as s lamp with a monochromator grating or prism to select the appropriate frequency*".

The Examiner thus suggested replacing the light source of Schalkhammer et al.-2 reference with a lamp and monochromator of White et. al.. However, the Office Action is respectfully unclear as to what *light source* of Schalkhammer et al.-2 reference it refers. If the action refers by the "*light source*" to a source of fluorescent light as in 102(b) rejection, then the Examiner's conclusion is respectfully wrong because within any of the Schalkhammer techniques the fluorescent light clearly cannot be produced by lamp and monochromator. If the action refers by the "*light source*" to a source of exciting light, i.e. that the exciting light should be read on the *claimed emitted and then transmitted and detected light*, then the arguments presented in item 2.1, 2.3 and 2.4 above are incorporated

here *mutatis mutandis*. (Applicants respectfully note that such interpretation of the **claimed emitted and then transmitted and detected light** of the invention contradicts the earlier interpretation brought forward in the Schalkhammer -2 based 102(b) rejection: when dealing with 102(b) rejection the rejection read **fluorescent** light on the claimed emitted and then transmitted and detected light; this is seen from item 4).

Claim Rejection in Office Action Summary

Claims 224-330 are rejected in item 6 of the Office Action Summary, but *no specific rejection has been made* in the Detailed Action. Accordingly, Applicants respectfully traverse this rejection and request withdrawal of the rejection or, if the rejection is not withdrawn, clarification.

In view of the above, Applicants respectfully submit that all of the prior art rejections of record have been overcome and should be withdrawn, and that the application is now in allowable form. An early notice of allowance is earnestly solicited and is believed to be fully warranted.

Respectfully submitted,

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